Academic Program Review

ACADEMIC YEAR	Spring 2014	☐ Basic Skills ☐ Transfer ☒ Career Technical Education (CTE)
PROGRAM	Air Conditioning and Refrigeration	
DEPARTMENT	Industrial Technology	
DIVISION	Economic and Work Force Development	
SUBMITTER	Frank Miranda	

I. INSTITUTIONAL GOALS

INSTITUTIONAL GOAL **1**	**INSTITUTIONAL MISSION AND EFFECTIVENESS** – The College will maintain programs and services that focus on the mission of the College supported by data-driven assessments to measure student learning and student success.
INSTITUTIONAL GOAL **2**	**STUDENT LEARNING PROGRAMS AND SERVICES** – The College will maintain instructional programs and services which support student success and the attainment of student educational goals.
INSTITUTIONAL GOAL **3**	**RESOURCES** – The College will develop and manage human, technological, physical, and financial resources to effectively support the College mission and the campus learning environment.
INSTITUTIONAL GOAL **4**	**LEADERSHIP AND GOVERNANCE** – The Board of Trustees and the Superintendent/President will establish policies that assure the quality, integrity, and effectiveness of student learning programs and services, and the financial stability of the institution.

II. PROGRAM GOALS

A. PAST – EVALUATION OF PREVIOUS CYCLE OBJECTIVES/PROGRAM GOALS (SET IN PREVIOUS YEAR)

List your previous objectives/goals and associated Institutional Goals. All program goals must address at least one of the institutional goals.

PAST PROGRAM GOALS (Describe past program goals.)	INSTITUTIONAL GOAL(S) (Check all that apply.)

1	PAST PROGRAM GOAL #1	INSTITUTIONAL GOAL(S)
	Identify Program Goal from Last Program Review: IVC is currently building a new career technical building. We are scheduled to move in by fall 2014. The state of the art facility will benefit students with a good learning environment. Futures goals include adding courses in renewable energy and commercial refrigeration and continue to offer morning, noon, night and weekend classes. Teach advance technology with the help of the HVAC advisory committee, local contractors and suppliers.	☒ 1 ☒ 2 ☒ 3 ☐ 4
	☐ Met ☒ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** Purchased some equipment to meet new refrigerant requirements. Purchase some electrical instruments to troubleshoot and repair air conditioners.	

2	PAST PROGRAM GOAL #2	INSTITUTIONAL GOAL(S)
	Identify Program Goal from Last Program Review: Currently the new HVAC does not have funding for adequate and sufficient equipment to teach using the latest technology available. It appears that funding reductions eliminated most equipment funding in order to be successful the program will need to purchase or build new lab trainers, mock up units of heat pump air conditioners, heating units, and commercial refrigeration units.	☒ 1 ☒ 2 ☒ 3 ☐ 4
	☐ Met ☐ Partially Met ☒ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** Funding reductions in Perkins and the general fund have reduced the capacity to purchase new equipment to maintain the latest technology in the market.	

3	PAST PROGRAM GOAL #3	INSTITUTIONAL GOAL(S)
	Identify Program Goal from Last Program Review: Grow the program and hire part-time faculty to accommodate student interest.	☒ 1 ☒ 2 ☒ 3 ☐ 4
	☐ Met ☐ Partially Met ☒ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** The program needs to be expanded to include additional technologies. The creation of new courses will require the hiring of new part-time faculty.	

Comments:

B. PRESENT – DATA ANALYSIS AND PROGRAM HEALTH

1. Summarize and analyze all disaggregated data by day, evening, gender, ethnicity, and distance education regarding enrollments, fill rates, productivity, completion, success, retention, persistence, and transfer (complete a, b, & c). ***Attach graphs or trend data***.

   a. Discuss and chart the trends in enrollment and fill rate for each program by day and evening at the program level.
   Fill rates are consistently high given the popularity of the program and the job opportunities in the community. There is a gap in the enrollment of women in the program. Day and evening students perform at about the same level.

   b. What are the trends in productivity? (WSCH/FTEF) The goal is 525 as per state guidelines. A low number means that we are below target levels for productivity. For example, in a small class that has a mandated cap of 15 students, the fill rate may be 100% but the productivity number (WSCH/FTEF) will be very low. A class with a cap of 40 students with a 100% fill rate will have a productivity number close to or above 525.
   Productivity in this program is low related to FTES/FTES. The class cap is limited to the number of work stations in the lab and on OSHA(safety) resolutions. The cap will increase by 20% with the new facility slated to open in fall 2014.

   c. Discuss and chart the success and retention rates by day, evening (extended day), and online classes in each program and identify gaps.

Term	CRN	Course	Inst Method	Duration	Session	Instructor	Enrolled	Drops	Success	Retention	AVE GPA
Fall 2010	10762	ACR101	F2F	Full Term	Day	Miranda	25	0	88%	100%	2.44
Fall 2010	11121	ACR101	F2F	Full Term	Day	Miranda	30	0	100%	100%	2.97
Spring 2011	20584	ACR101	F2F	Full Term	Day	Miranda	22	0	64%	100%	1.82
Spring 2011	20587	ACR101	F2F	Full Term	Eve	Miranda	13	0	85%	100%	2.77
Fall 2011	10829	ACR101	F2F	Full Term	Day	Miranda	16	4	75%	75%	2.83
Spring 2012	20531	ACR101	F2F	Full Term	Day	Miranda	22	0	73%	100%	2.14

Fall 2012	10364	ACR101	F2F	Full Term	Day	Miranda	22	6	73%	73%	2.81
Spring 2013	20522	ACR101	F2F	Full Term	Day	Miranda	16	2	88%	88%	2.57
Spring 2013	20573	ACR101	F2F	Full Term	Eve	Miranda	13	0	92%	100%	2.85
Spring 2011	20585	ACR102	F2F	Full Term	Day	Miranda	22	0	91%	100%	2.55
Fall 2011	10835	ACR102	F2F	Full Term	Eve	Miranda	25	5	68%	80%	2.95
Spring 2012	20536	ACR102	F2F	Full Term	Day	Miranda	20	1	65%	95%	2.11
Spring 2013	20525	ACR102	F2F	Full Term	Eve	Miranda	23	0	100%	100%	2.78
Fall 2010	10763	ACR103	F2F	Full Term	Eve	Miranda	17	2	76%	88%	2.87
Fall 2011	10832	ACR103	F2F	Full Term	Day	Miranda	25	5	52%	80%	2.30
Spring 2012	20537	ACR103	F2F	Full Term	Eve	Miranda	19	1	84%	95%	2.50
Spring 2013	20541	ACR103	F2F	Full Term	Day	Miranda	16	0	100%	100%	2.69
Fall 2010	10764	ACR104	F2F	Full Term	Day	Miranda	17	2	71%	88%	2.40
Fall 2011	10833	ACR104	F2F	Full Term	Eve	Miranda	18	4	61%	78%	3.00
Spring 2012	20532	ACR104	F2F	Full Term	Day	Miranda	13	-1	100%	108%	2.57
Fall 2012	10367	ACR104	F2F	Full Term	Eve	Miranda	19	2	74%	89%	2.65
Fall 2010	10768	ACR105	F2F	Full Term	Day	Miranda	14	0	100%	100%	2.36
Spring 2011	20588	ACR105	F2F	Full Term	Eve	Miranda	15	0	87%	100%	3.27
Fall 2011	10834	ACR105	F2F	Full Term	Day	Miranda	13	7	46%	46%	3.50
Fall 2012	10368	ACR105	F2F	Full Term	Day	Miranda	13	2	85%	85%	3.45

Fall 2012	10370	ACR105	F2F	Full Term	Eve	Miranda	15	0	80%	100%	2.93
Fall 2010	10766	ACR106	F2F	Full Term	Eve	Miranda	21	1	86%	95%	2.45
Spring 2011	20586	ACR106	F2F	Full Term	Day	Miranda	14	1	57%	93%	1.92
Spring 2012	20538	ACR106	F2F	Full Term	Eve	Miranda	13	0	100%	100%	3.54
Fall 2012	10371	ACR106	F2F	Full Term	Day	Miranda	15	2	73%	87%	2.85
Spring 2013	20569	ACR106	F2F	Full Term	Day	Miranda	13	2	85%	85%	2.55

d. Discuss and chart the success and retention rates in each program and identify gaps for five ethnic groups. (African-American, White, all Hispanics, Other, Unknown).

ACR	African-Am			White			Asian			Hispanic			Mexican, M.A.		
Term	#	Success	Retention	#	Success	Retention	#	Success	Retention	#	Success	Retention	#	Success	Retention
Fall 2010	2	100%	100%	6	67%	100%	1	100%	100%	74	88%	97%	35	89%	91%
Fall 2011				1	100%	100%				66	58%	74%	21	67%	76%
Fall 2012	1	100%	100%	2	100%	100%				55	75%	82%	15	67%	93%
Spring 2011				1	100%	100%				48	79%	100%	24	75%	96%
Spring 2012				1	100%	100%				60	75%	98%	19	95%	100%
Spring 2013	1	0%	0%	2	100%	100%				53	94%	96%	9	100%	100%
Totals	4	75%	75%	13	85%	100%	1	100%	100%	356	78%	91%	123	81%	92%

The enrollment of students in the program is consistent with the overall demographics of the college.

e. Discuss the trends in the number of degrees or certificates awarded, if applicable. (You may be able to expand more about this in B.3 below.)

Program Completion

Number of Degrees and Certificates Awarded 2010-2011 through 2012-2013 (3 years)

Degrees		Awarded
A.S.	Air Conditioning and Refrigeration Technology	0

Certificates	Awarded
Air Conditioning and Refrigeration Technology	27

The degree option has not been pursued. A plan is being developed with counseling to incentivize students to complete their degree option.

f. What program changes, if any, will you recommend that you expect would have a positive effect on your students in your program, if applicable?
The program is successful as is. Additional courses in a new certificate can be added so the program can grow.

2. Summarize revisions, additions, deletions, or alternate delivery methods to courses and/or program based on the last program review.
A new certificate course in Refrigeration will be added.

3. Evaluate the program's viability by addressing program completion, size (FTES), projections (growing/stable/declining), and quality of outcomes. For CTE programs, also include labor market projections, placement, and performance on external testing/exams (i.e. ASE, NABCEP) and industry-recognized credentials, placement, and performance on external testing or exams (NCLEX, ASC, NAP).

   Please see attached CTE program review data.

C. FUTURE – LIST OF "SMART" (SPECIFIC MEASURABLE ATTAINABLE RELEVANT TIME-LIMITED) PROGRAM OBJECTIVES FOR NEXT ACADEMIC YEAR TO ADDRESS PROGRAM IMPROVEMENT, GROWTH, OR UNMET NEEDS/GOALS. ALL PROGRAM GOALS MUST ADDRESS AT LEAST ONE OF THE INSTITUTIONAL GOALS.

FUTURE PROGRAM GOALS (Describe future program goals. List in order of budget priority.)	INSTITUTIONAL GOAL(S) (Check all that apply.)

1	FUTURE PROGRAM GOAL #1 Budget Priority #1	INSTITUTIONAL GOAL(S)
Identify Goal: Improve completion of Associate Degree		☒ 1 ☐ 2 ☐ 3 ☐ 4
Objective: Assist all students in their goal to receive a certificate of A.S degree		
Task(s): Set up regular appointments with students to review that they are on course to graduate		
Timeline: Guide the student through the 2 years of course work for completion		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☒ One-Time ☐ Recurring	☐ Categorical Specify:	☒ General Fund	☐ Facilities ☒ Marketing ☐ Technology ☐ Professional Development ☐ Staffing	$250.00

2	FUTURE PROGRAM GOAL #2 Budget Priority #2	INSTITUTIONAL GOAL(S)
Identify Goal: Improve technology and equipment to maintain currency in the fieldwith the help of the HVAC advisory committee, local contractors and suppliers.		☒ 1 ☒ 2 ☐ 3 ☐ 4
Objective: Acquire and purchase tools and equipment to allow for implementation of new technology		
Task(s):		
Timeline: Spring 2015		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☐ One-Time ☒ Recurring	☒ Categorical Specify: Perkins, grant money	☐ General Fund	☐ Facilities ☐ Marketing ☒ Technology ☒ Professional Development ☐ Staffing	$20,000.00

3	FUTURE PROGRAM GOAL #3 Budget Priority #3	INSTITUTIONAL GOAL(S)
Identify Goal: Develop new certificate/degree option in Refrigeration to enhance learning and job opportunities for students.		☒ 1 ☒ 2 ☐ 3 ☐ 4
Objective: Accommodate student interest		
Task(s):		
Timeline: Spring 2016		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☐ One-Time ☒ Recurring	☐ Categorical Specify:	☒ General Fund	☐ Facilities ☐ Marketing ☐ Technology ☐ Professional Development ☒ Staffing	$_____

TOTAL BUDGET REQUEST	$22,250.00

1. How will your enhanced budget request improve student success?

   Student success will be improved by using new equipment, latest technology and adequate staffing

Comments:

III. INSTITUTIONAL STUDENT LEARNING OUTCOMES (ISLOs)

ISLO 1	COMMUNICATION SKILLS
ISLO 2	CRITICAL THINKING SKILLS
ISLO 3	PERSONAL RESPONSIBILITY
ISLO 4	INFORMATION LITERACY
ISLO 5	GLOBAL AWARENESS

IV. PROGRAM LEARNING OUTCOMES (PLOs)

PROGRAM LEARNING OUTCOMES (Describe learning outcomes.)	**ISLO(S)** [Link PLO to appropriate ISLO(s).]

PLO 1	**PROGRAM LEARNING OUTCOME #1**	**ISLO(S)**
	Identify Program Outcome: Demonstrate knowledge of OHSA safety practices required for repair and installation of air conditioning and refrigerant equipment.	☐ ISLO 1 ☒ ISLO 2 ☒ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: With the existence of so many laws and regulations, useful/practical regulations were covered and discussed.	
	☐ Met ☒ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** Provide resources to all students as to where they can find all laws and regulations.	

PLO 2	PROGRAM LEARNING OUTCOME #2	ISLO(S)
	Identify Program Outcome: Demonstrate and understand practical and manipulative skills related to HVAC/R industry.	☒ ISLO 1 ☒ ISLO 2 ☒ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: Students are trained in accordance with industry norms and practical applications.	
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:**	

PLO 3	PROGRAM LEARNING OUTCOME #3	ISLO(S)
	Identify Program Outcome: Demonstrate competency and mastery of the body-of-knowledge in employee responsibilities within the HVAC/R industry.	☒ ISLO 1 ☒ ISLO 2 ☒ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: Guest Speakers were brought in to talk to students about presentation, interviewing and job skills need in the work force.	
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:**	

***** ATTACH PLO/SLO GRID *****

Student Learning Outcomes and Program Learning Outcomes

ACR101

Outcome 1: Upon completion of this course the students will be able to perform a standing pressure test on a vessel using dry nitrogen.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4, ISLO5
Outcome 2: Upon completion of this course, the students will be able to make connections with copper tubing using both low-temperature solder and high-temperature brazing material.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4
Outcome 3: Perform a deep vacuum test using a high quality vacuum pump and an electronic vacuum gage.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4

ACR 102

Outcome 1: Upon completion of this course, the students will be able to identify and describe various components in a typical air-conditioning system.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4, ISLO5

Outcome 2: Upon completion of this course, the students will be able to take wet-bulb and dry-bulb temperature readings, determine relative humidity from the psychrometric chart, and use this information to determine the level of comfort from the ASHREA generalized comfort chart.	Written Exam, Practical Exam with Skills	ISLO2, ISLO3, ISLO4, ISLO5
Outcome 3: Check out components of an air-conditioning system for an orderly system start-up, one component at a time, and check each one to insure that it is operating correctly	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4

ACR103

Outcome 1: Make current voltage, and resistance readings, you will also determine the current voltage, and resistance of a circuit using OHM'S Law.	Written Exam, Practical Exam with Skills	ISLO2, ISLO3, ISLO4, ISLO5
Outcome 2: Follow the circuit in typical electric air-conditioning system and check the amperage in a low-voltage circuit.	Written Exam, Practical Exam with skills	ISLO2, ISLO3, ISLO5
Outcome 3: Make voltage and amperage readings on actual operating equipment using VOM. You will be able to do this under the supervision of your instructor.	Written Exam, Practical Exam with Skills	ISLO2, ISLO3, ISLO4, ISLO5

ACR 104

Outcome 1: Upon completion of this course, the students troubleshoot and electrical problems with the changing from cool to heat.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3 ISLO4
Outcome 2: Be familiar with the components in an electric heating system and will be able to list the specifications for these components.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3 ISLO4
Outcome 3: Identify and describe the typical components in an air-to-air heat pump system.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4

ACR 105

Outcome 1: Upon completion of this course, the students will be able to demonstrate knowledge of calculations to apply mathematical formulas related to HVAC units.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO4

Outcome 2: Upon completion of this course the students will be able to use a duct chart to evaluate the duct size on a simple residential or commercial duct system for adequate airflow in heating or cooling cycles.	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4, ISLO5
Outcome 3: Use basic airflow measuring instruments to measure airflow from register and grilles	Written Exam, Practical Exam with Skills	ISLO2, ISLO3, ISLO4

ACR 106

Outcome 1: Upon completion of this course, the students will be able to demonstrate knowledge of safety practices required during the installation of HVAC/R duct system.	Written Exam, Practical Exam with Skills	ISLO2, ISLO3, ISLO4,
Outcome 2: Upon completion of this course, the students will be able to demonstrate knowledge of layout procedures for duct components.	Written Exam, Practical Exam with Skills	ISLO2, ISLO3, ISLO4
Outcome 3: Cut and form a simple layout pattern for a galvanized sheet metal air-conditioning square-to-round air ducts	Written Exam, Practical Exam with Skills	ISLO1, ISLO2, ISLO3, ISLO4